

# Hydroxy-Methoxybenzoic Methyl Esters: Synthesis and Antifeedant Activity on the Pine Weevil, *Hylobius abietis*

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The pine weevil *Hylobius abietis* (L.) (Coleoptera: Curculionidae) feeds on the bark of coniferous seedlings and is the economically most important forestry restocking pest in large parts of Europe. Substances with an antifeedant effect may offer an environmentally friendly alternative to insecticides for the protection of planted seedlings. Bioassays were performed on commercial and synthetic methyl hydroxy-methoxybenzoates in order to determine their possible antifeedant activity.

Two methyl hydroxy-methoxybenzoates were synthesized by esterification and mono-*O*-methylation of two dihydroxybenzoic acids. A regioselective protection-deprotection strategy was used in the synthetic pathway of the other non-commercial esters, esterification and selective pivaloylation of the less-hindered hydroxyl group of other commercial dihydroxybenzoic acids gave diester intermediates, which then were *O*-methylated before methanolysis of the pivaloyl group which yielded the desired non-commercial methyl hydroxy-methoxybenzoates.

The five synthesized methyl hydroxy-methoxybenzoic esters were complemented with commercial samples of the five other isomers of methyl hydroxy-methoxybenzoate and spectrometric data were collected for the complete set of isomers. All ten isomers were tested for their antifeedant effect on the pine weevil. The effect varied considerably among the hydroxy-methoxybenzoic esters. Methyl 2-hydroxy-3-methoxybenzoate showed the highest effect and may thus be a candidate for practical use in pine weevil pest management.

**Key words:** Methyl Hydroxy-methoxybenzoates, Antifeedant Activity, *Hylobius abietis*